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SANSKRIT HISTORICAL PHONOLOGY

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Introductory note

FOR MANY YEARS the present writer, like some of his colleagues in teaching Sanskrit to beginners, has tried to introduce them not only to the language, but in some measure to its history, or better prehistory This has involved the attempt to provide a rudimentary but systematic account of Indo European phonology in relation to Sanskrit The account must be very simple, or the average beginner, who usually has little knowledge of either Indo-European or the comparative method, will find it hard to assimilate

No previously printed work appears to contain a statement satisfactory for this purpose The closest approach is Thumb's *Handbuch*, excellent as it is in many ways, it is not what seems to me required

What follows is nothing more than an attempt to satisfy this want It is intended to furnish, in as simple a form as possible, the barest essentials of the subject just what it seems to me a beginner must have, in order to get a sound view of the basic system, and no more Profundity is eschewed Controversial matters are avoided as far as possible There is no pretension to either completeness or originality Most of what is said is commonplace to all Indo Europeanists Only in matters connected with the semivowels have I felt compelled to go beyond the standard handbooks, for reasons made clear in certain recent publications, the chief of which is cited in § 60 below

The regular development of each Indo European sound in Sanskrit is illustrated by (usually) a single etymological correspondence At the end a table of Sanskrit vowels with their possible regular Indo European correspondences, is provided It has seemed unnecessary to do the like with the consonants

My transliteration of Sanskrit follows that of Whitney and Lanman the books commonly used by beginners in this country I should have liked to use ś instead of ç and to omit the macron

over āi and āu, in accord with general usage today, but after some hesitation have decided against it. After even more hesitation, I have decided not to print accents on Sanskrit words, except when they particularly concern the subject under discussion. My reason is purely pedagogic. In the first year of Sanskrit, at least as commonly taught in this country, the student encounters no accented texts. He sees accents printed only in grammars and vocabularies or dictionaries. Is it profitable, or wise, to try to burden him at this stage with the pitch accents, which have no practical value in helping him to pronounce the words (indeed quite the reverse)?

My thanks are due to a number of colleagues who have offered helpful criticisms; especially to Professor George S. Lane of the University of North Carolina.

Outline of Sanskrit Historical Phonology

1 Sanskrit (abbreviated Skt) in the following is always used in a wide sense to include the Vedic dialects See the Introduction to Whitney's Grammar

2 Indo-European (abbreviated IE) is the hypothetical pre historic language from which Sanskrit as well as many other languages of Asia and most languages of Europe are demonstrably derived To distinguish it from its descendants, it is also often called Proto Indo European or Primitive Indo European (abbreviated PIE)

3 The Indo European languages (the historic descendants of this prehistoric language) are often divided into two groups, called the satem and the centum languages This division is based on their several treatments of the IE guttural consonants, see § 21 The division is traditional and is sometimes convenient, but it suggests more than the proved facts justify The two groups are distinguished by nothing else than their treatment of the gutturals The classification should not be taken as meaning that each group is descended from an original distinct language more recent than Proto Indo European

4. The satem languages are in general the eastern division of the family, geographically speaking The principal satem lan guages are Indo Iranian (including Sanskrit and other Indic languages on the one hand and the Iranian languages of which the two oldest are Avestan and Old Persian, on the other), Armenian Albanian and Balto Slavic

5 The centum languages are in general the western group Their principal representatives are Greek, Italic (including Oscan Umbrian as well as Latin), Germanic, and Celtic

6 Illustrative examples in this outline will mostly be taken from Sanskrit, Greek, Latin, and Germanic languages The latter include Gothic (Gth), Old Norse (ON), Old English (OE), Old Saxon (OS) Old High German (OHG), and Old Frisian, besides later dialects Occasionally cognates will be quoted from Avestan (Av), Lithuanian (Lith , a Baltic language), Old Slavic (and Russian), and Old Irish (OIr), very rarely from others

7 The phonemic system of IE contained *vowels, semivowels,* and *consonants*

Consonants

8. The IE consonant system consisted almost wholly of *stops* The following table shows the stops attributed to IE

Labials	p	ph	b	bh
Dentals	t	th	d	dh
Palatals	ḱ	ḱh	ĝ	ĝh
Velars	k	kh	g	gh
Labiovelars	k^w	k^wh	g^w	g^wh

The palatals, velars, and labiovelars are called collectively gutturals

9 The *voiceless aspirates* ph, th, etc are indistinguishable from the voiceless non aspirates in all other languages than Indo-Iranian, except that Greek has aspirates for some of them (not all) Even in Sanskrit they are not very common, and not all of them can be illustrated by convincing etymologies in the other languages The exponents of the Indo-Hittite laryngeal hypothesis derive them from pre-IE stops followed by laryngeals Sturtevant, *Laryngeals*, § 78, cf below, § 138 We shall ignore the voiceless aspirates for the most part.

10 *Germanic* correspondences can be understood only in terms of Grimm's Law and Verner's Law By *Grimm's Law*—

	[1] IE p, t, k	become	Proto-Germanic	f, þ, h (ch)
and	[1] IE ph, th, kh	"	"	f, þ, h (ch)
	IE b, d, g	"	"	p, t, k
	IE bh, dh, gh	"	"	b, d, g

The Proto-Germanic sounds written b, d, g may have been voiced spirants rather than stops

11 In High German, some further shifts took place, thus, general Germanic p, t, k (from IE b, d, g) became either f (ff), s (ss), ch, or pf, ts, kh (k plus ch) These High German changes we shall not describe in detail

12 By *Verner's Law*, Proto-Germanic f, þ, h (from IE p, t, k, or ph, th kh) became voiced when the preceding syllable was not

[1] However, after Proto-Germanic spirants (s, from IE s and f, þ, h) these sounds appear as Germanic p t, k.

accented in IE They then coincided with Proto-Germanic b, d, g (whether these were spirants or stops) *Verner's Law* also involves IE and Proto Germanic s, which changed to z when the preceding syllable was not accented in IE In North and West Germanic (= all Germanic except Gothic) this z became r

13 *The law of two aspirates, or Grassmann's Law* In Sanskrit and in Greek (independently of each other), an aspirate at the beginning of a syllable loses its aspiration if another aspirate comes at the end of the same syllable or at the beginning of the next In Greek this change took place after the voiced aspirates had become voiceless ϕ, θ, χ, consequently the deaspirated stops are always voiceless π, τ, κ (not voiced β, δ, γ) Ex. IE stem dhrugh 'injurious', Skt gen sg druh as, but nom sg dhruk (because in the nom the aspiration of the final is lost) Cf Gk. τριχος, gen sg 'of the hair,' but nom sg θριξ (IE dhrigh)

14 IE p = Skt. p

IE septṃ 'seven' Skt sapta, Gk ἑπτα, Lat. septem, Gth OHG sibun, OE seofon, Eng seven (problematic as to loss of t, and as to n for m), OSlav sedmь (Russ sjemj),[2] also problematic.

15 IE b = Skt b (a strangely rare sound in IE)

IE root bel,—bol 'strong' Skt bala 'strength,' balishtha 'strongest', Gk βελτιων, βελτερος 'stronger', perhaps Lat dē bilis 'lacking in strength, weak', OSlav boljьjь[2] 'greater,' Russ bólјeye adv, 'more,' boljshóy 'great'

16 IE bh = Skt. bh

IE bhū (zero grade to bhewə) 'become, come to be, be' Skt. aorist 3 sg a bhū t 'became', Gk. ἐ-φῡ̄, OLat. fu ī (later fuī), ON OE OHG bū (noun) 'dwelling,' OE plur by (from a form with suffix containing i), Ger Bau, Lith bútі, infin, 'to be', OSlav bytі, Russ bytj 'to be'

17 IE t = Skt t

IE stem tri, nom pl masc treyes 'three' Skt. tri, trayas, Gk τρι, τρε ς (dial τρεες, for treyes), Lat. trēs, Gth þreis, Eng three, OSlav trьje, trije, nt tri, Russ trji

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[2] In Russian we represent a palatalized consonant by consonant plus j In OSlav (Old Bulgarian Church Slavic) ь represents a reduced vowel of u quality and ъ one of i quality

18 IE th = Skt th

In 2 sg perfect ending IE tha Skt. tha, Gk θα, Gth t, e g Skt. vet tha 'thou knowest', Gk οἶσ-θα, Gth waist, Ger weisst

19 IE d = Skt d

IE dekṃ 'ten' Skt. daça, Gk δεκα, Lat decem, Gth taihun (with n for m somewhat problematic), Eng ten, Lith de ĩmt(s), OSlav desętь (Russ djésjatj) ten' (the Balto Slavic words originally collectives, 'a decad' with IE suffix ti)

20 IE dh = Skt dh

IE dhumo 'smoke, steam mist' Skt. dhuma 'smoke mist', Gk. θῦμος 'spirit, excitement passion', Lat fumus 'smoke', Lith dúmai, pl, 'smoke', OSlav dymъ Russ dym 'smoke'

21 *The three series of gutturals* As was said above the IE languages fall into two groups as regards their treatment of these consonants

I In the eastern group—Indo Iranian Armenian, Albanian and Balto Slavic—the *velars* and *labiovelars* fall together, appearing as plain velars (that is the labiovelars lose the labialization), while the *palatals* in general become *sibilants*

II In the western group—Greek Italic Celtic and Germanic—the palatals and velars fall together while the labiovelars remain distinct

Group I is called the *satem* languages (Avestan satəm '100'), Group II the *centum* languages (Lat centum)

22. *The Indo European palatals* In most of the satem languages these as we saw appear as sibilants This is the case in Skt. as regards the voiceless k̑

23 IE k̑ = Skt ç

IE k̑ntom '100 Skt çatam Avestan satəm, Gk (ε)κατον, Lat centum OIrish cét Welsh cant Gth hund, Lith šimtas OSlav sъtó Russ sto (for vocalism see § 103)

24. But the IE voiced palatals (non aspirate and aspirate) do *not* become sibilants before and after vowels in Sanskrit (In certain phonetic conditions they do or once did see §§ 39 40) Sanskrit is unique among all the satem languages in this respect

and strangely destroys the parallelism otherwise existing between voiced and voiceless consonants

25 IE ĝ = Skt j

IE root ĝenə, ĝonə, zero grade ĝn̥ 'beget', numerous derivatives in most IE languages Thus, IE ĝenos (nt) Skt janas 'tribe, people', Gk γενος 'birth, race' etc, Lat genus Slightly different suffix in Avestan zana 'people' (note Iranian sibilant) See § 152 for ĝn̥ to The root is lost, or nearly so, in Balto Slavic

26 IE ĝh = Skt h

IE root ghey zero grade ĝhi 'cold, snow', generally with m affixes (or is m part of the original root? not wholly clear) Normal grade Skt heman- 'winter', Gk χειμα, χειμων 'winter', Lith ziemà, OSlav zima, Russ zjimá 'winter' (Note sibilants in Balto Slavic) Zero grade Skt. hima 'snow,' himā 'winter', Gk (δυσ)χιμος 'wintry', Lat bimus for bi himus 'two winters (i e years) old'

Related but problematic are Gk χιων 'snow', Lat hiems 'winter', Avestan zaen 'winter' (note Iranian sibilant)

27 The IE *velars* and *labiovelars* fall together in Skt as in the other satem languages But tho their development is identical, it is two fold (Slavic has a similar double treatment of them)

In general, they both appear as plain velars (or gutturals) Skt k, g, gh

But when followed by an Indo-European front vowel or semi vowel—that is, before IE e, ē, i, ī, y (which appear in Skt as a, ā, i, ī, y)—they are changed to Sanskrit palatals Skt c, j, h* (But before Skt a, a when these represent IE a, o, ā, ō, Skt regularly has gutturals)

Note that *these Sanskrit* 'palatals' are, then, not derived from IE 'palatals' (ḱ, ĝ, ĝh), but from IE k or kʷ, g or gʷ, gh or gʷh

Confusing, however, is the fact that, as we just saw, the IE *voiced* palatals (ĝ, ĝh), between vowels at least, *do* appear as Skt palatal j, and as h respectively the same sounds which, before IE front vowels and semivowels, also represent IE voiced velars and labiovelars

In other words, Skt j and h are, in themselves, ambiguous as to

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* Structurally and historically Skt. h may be classed as a palatal see § 45

origin. Not so Skt. c, which can only come from a velar or labiovelar (k or k^w); for IE palatal ḱ gives Skt. ç, a sibilant.

28. IE k = Skt. k or c

IE krewəs-: Skt. kraviṣ- 'meat, raw flesh', Gk. κρέ(ϝ)ας 'meat.' Related: (o grade, different suffixes) Lith. kraũjas 'blood'; OE. hrēaw, Eng. raw; (zero-grade IE krū-, before vowels kruw-) Skt. krū-ra- 'bloody, cruel'; Lat. cruor (IE *kruwōs) 'blood'; OSlav. krъvь, Russ. krovj 'blood' (IE *kruwi-).

In this group of words there is no opportunity for the double representation, which may be illustrated by the two closely related and almost synonymous adjectives Skt. çukra- 'bright' and çuci- 'shining, clear,' both from a root Skt. çuc or çuk 'shine.'

29. IE g = Skt. g or j

IE awg- 'be strong,' awges- 'strength': Skt. ojas- 'strength'; related are Lat. augus-tus 'mighty, exalted,' Lat. augeō; Gth. aukan, OE. ēacian 'increase,' Eng. eke (verb and adverb). But, from zero grade IE ug-, before a consonant, Skt. ug-ra- 'strong, fierce'

30. IE gh = Skt. gh or h

IE root dhrewgh (dhrowgh), zero grade dhrugh 'injure, deceive': Skt. druh-yati 'injures' (d for dh by Grassmann's Law, § 13; h before y), Vedic drogha- (IE dhrowgho-) 'injury'; OSaxon driogan, OHG. triogan, Ger be-trügen.

31. IE k^w = Skt. k or c

Note: in Greek, the labiovelars (but not the plain velars) have double representation, determined by the following sound, like the velars and labiovelars in Sanskrit Before e and i vowels they appear as dentals, τ, δ, θ, otherwise as labials, π, β, φ.

IE k^wo-, k^wi-, interrogative pronoun: Skt. ka- 'who?', cid (orig. 'what?', used only as adverbial particle, kim 'what?' is analogical both in initial k- and in ending -m); Gk. πό-θεν 'whence?', τί-ς 'who?'; Lat. quo-, qui-, Gth. hwas 'who?', OE. hwā, Eng. who; and OE. hwī, hwiu 'how, why?', Eng. why; Lith kàs 'who?'; OSlav kъ-to (Russ kto) 'who?', gen. česo 'whose?'

32. IE g^w = Skt. g or j

(Cf. § 31, Note) IE $g^wōw$- 'cow, ox': Skt. gāu-; Gk. βοῦς; Lat. bōs (Oscan-Umbrian loanword, regular Latin would have

initial v), OE cu, Eng cow, OSlav gov-ędo, cf Russ govjádjina 'beef'

IE g^{w}īwo 'alive' Skt jīva 'alive', Lat. vivus, Lith gyvas, OSlav zhivъ, Russ zhiv 'alive' Regular Greek δ perhaps in διαιτα 'manner of life' (In Greek βιος 'life,' cf § 147, β is problematic)

33 IE $g^{w}h$ = Skt gh or h

(Cf § 31, Note) IE root $g^{w}hen$, $g^{w}hon$, $g^{w}hn̥$ 'smite, slay' Skt. hanti (IE $g^{w}hen$ ti) 'he slays,' noun ghana 'slaying' (both adj and noun, IE $g^{w}hono$), Gk θεινω 'I slay' (IE $g^{w}henyo$), φονος 'murder' (= Skt ghana), OHG gund fano 'war banner', Lith genù, 1 sg pres, giniti infin, 'drive (with blows)', OSlav gъnati, Russ gnatj, 'drive, hunt,' and general Slav noun gonъ, gon 'pursuit' etc (= Skt ghana, Gk φονος, Russ in compounds and derivatives, e g gonjítj 'drive')

34 *Sibilants* The only absolutely certain IE sibilant phoneme was

IE s = Skt s

IE septm̥ 'seven' Skt sapta, Gk επτα, etc, see § 14

35 It is pretty certain that this s automatically became voiced z in IE in certain phonetic situations, in other situations it may have been otherwise modified Some believe that IE had a phonemically distinct z, at least, this seems to me doubtful

36 *IE þ, and voiced correspondents* Only after guttural consonants (k̑, k, k^{w} etc), IE seems in some words to show a set of mysterious consonants which appear as dentals (t etc) in Greek and Celtic, but as s or sh sounds in Indo Iranian, Italic, Germanic and Balto Slavic. It is customary to assume that these consonants were similar to the voiceless English *th* in *thin*, and its voiced counterpart in *this* The sounds are written þ, d̑, d̑h It seems to me doubtful whether our current theories have got at the truth on this point. A simple instance of the voiceless sound

IE þ (?) = Skt ṣ

IE ṛkþo 'bear' (the animal) Skt ṛkṣa, Gk ἄρκτος, Lat ursus, Middle Irish art 'bear'

37 *Sanskrit 'linguals or domals or cerebrals* Sanskrit has a series of sounds, transliterated ṭ ṭh, d, dh, n, ṣ called by the above (or still different) names, which have no correspondents in any

other Indo-European language So far as they are of IE origin at all, these domals mostly are modifications of IE dentals

38 The dental nasal n regularly becomes domal ṇ under the conditions stated in Whitney 189, the dental sibilant s becomes domal ṣ by Whitney 180, a dental immediately following a domal in the same word is mostly domalized (details in Whitney 196 ff)

39 Further, by regular phonetic development, IE palatals under certain conditions (notably before IE dentals and in final position) become domals, and a following dental is then also made domal See Whitney 218, 219, 222, Wackernagel I §§ 120, 149

IE root dik Skt diçati 'shows,' but participle diṣṭa 'shown'

IE root yeğ, zero grade iğ, 'revere' Skt yajati 'worships,' but pple iṣṭa (Contrast IE root yug, with velar g Skt yug a(m) 'yoke' and yuj 'joining' (chiefly in cpds), pple yukta)

40 The IE palatal voiced aspirate ğh combined with following dental, most commonly t, in prehistoric Indo Iranian, forming the cluster *zdh, for theoretical IE ğh t which became (perhaps in IE itself) ğdh (just so in Skt we regularly find theoretical gh t, dh t, bh t becoming respectively gdh, ddh bdh, Whitney 160) This *zdh in Skt lost the voiced sibilant, which however left its trace in domalization of dh to dh, and lengthening of a preceding short vowel

IE root leygh ligh 'lick' Skt lihati 'licks,' but participle lidha 'licked' Here a theoretical IE *ligh to became first, perhaps in IE itself, liğ dho which became Indo-Iranian liždha , Skt līdha

41 Aside from the cases of §§ 38-40, the Sanskrit domals do not occur in genuinely native Sanskrit words

42 The words containing them are partly non Aryan, partly of Middle Indic origin in either case, borrowed from dialects other than that on which Sanskrit is primarily based

43 In many Middle Indic dialects, Sanskrit dentals have become domals in some cases universally, in others in certain phonetic surroundings, especially when a Skt consonantal or vocalic r (which has domal articulation in Skt) adjoined the dental Many such words were borrowed from these Middle Indic dialects into Sanskrit itself

44 Thus the Sanskrit word krta 'made' became in many MI dialects kata , the change of r to a is also MIndic, domal t is due to the original r This kata , in certain compounds, was borrowed into Skt e g Skt. vikata 'distorted, ugly' But the genuine Skt vikrta likewise exists, meaning 'modified, altered' but also 'mal formed, disfigured maimed' and the like This and many similar cases prove that the domals in words of this type, are really foreign to original Sanskrit, even if of Indo European origin they are the result of Middle Indic sound changes, and appear in Skt only by borrowing

45 *Sanskrit h* This sound a 'murmured' h or voiced glottal spirant, is classed by the Hindus as phonetically a guttural His torically, we have already seen that it is the regular representative of IE gh the palatal voiced aspirate, under all circumstances, and of IE gh, g^{w}h, the velar and labiovelar voiced aspirates, before IE front vowels and semivowels Structurally it may be regarded as the aspirate corresponding to Skt j (palatal)

46 But also, h not infrequently replaces dh So to root dha 'place,' the past passive participle is hita (for dhita) In a very few cases, also, it represents bh the root grabh 'seize' also appears as grah The conditions under which h replaced dh and bh are obscure, but doubtless dialectal (i e due to dialect loans, as in the case of many domals) It is worth noting that many Middle Indic dialects replace most Skt aspirate stops (primarily between vowels) by h

47 *The Sanskrit palatal aspirates* Skt. ch and jh are said by the Hindu phoneticians to stand in the same relation to c and j that the other aspirates do to the non aspirates But historically and structurally the case is otherwise

48 jh exists only in loanwords (from either Middle Indic or non Aryan dialects), and in a few sound imitative words It is in other words hardly a normal Skt. phoneme Cf § 45, the aspirate to j is h

49 ch also occurs in some loanwords. When derived directly from IE, it is the resultant of a combination of IE s with k or kh (possibly also k, kh) Consistent with this origin is the fact that ch is always a double or long consonant even if a preceding vowel is short, the syllable is prosodically long as always before more than

one consonant. It is often written double, that is, preceded by c; but there can be no really meaningful distinction between ch and cch; some rules are given, but it is nothing but a matter of orthographic convention.

50. IE sḱ, sḱh = Skt. ch

IE g^{w}m̥-sketi 'goes': Skt. gachati (usually written gacchati); Gk. *βάσκω*.

IE root sḱhid 'split': Skt. root chid- 'split'; Gk. *σχίζω*; Lat. scindō. (Some, on the basis of Baltic forms, assume IE skh- here.)

Vowels

51. There were three IE short vowels, a, e, o; and three long vowels, ā, ē, ō. Sanskrit has merged each set of three into a single vowel which we write a, ā. We have seen in § 27 that it nevertheless shows some traces of the original distinction, at any rate of that between e, ē on the one hand, and a, o, ā, ō on the other.

52. IE a = Skt. a

IE agro- 'field': Skt. ajra- 'field, plain'; Gk. *ἀγρός*; Lat. ager; Gth. akrs, Ger. Acker, Eng. acre.

53. IE ā = Skt. ā

IE bhrātor-, bhrāter-: Skt. bhrātar-; Gk. *φρᾱ́τηρ* 'tribesman'; Lat. frāter; Gth. brōþar, Eng. brother, Lith. broterėlis (dim.); OSlav. bratrъ, bratъ. (The latter may represent the IE nom sg. bhrātē, bhrātō: Skt. bhrātā; but the relation of the two forms is disputed.)

54. IE e = Skt. a

IE esti '(he, she, it) is': Skt. asti, Gk. *ἐστί*, Lat. est; Ger. ist, (Old) Lith. esti; OSlav. (j)estъ, Russ. (y)estj.

55. IE ē = Skt. ā

IE root dhē- 'put, place': Skt. dhā-, as in dadhāti 'puts, places,' dhāna- 'receptacle, place for setting (something)'; Gk. *τί θη-μι* 'I place,' *ἔ-θη-κα* 'I placed'; Lat. fēcī (originally) 'I placed,' and con-dō 'I put together'; OSaxon de-da, OHG. te-ta 'I did'; OSlav. dějǫ, děti 'place,' Russ. djetj 'to put.'

IE sēmi (adv., and prefix) 'one-half'; Skt. sāmi (chiefly in compounds); Gk. *ἡμι-* (only in cpds.); Lat. sēmi; OHG. sāmi.

56 IE o = Skt a

IE potı 'lord, husband' Skt patı 'lord, husband', Gk ποσις 'husband', Lat *potıs 'able' (possum for potıs sum 'I am able'), Gth faþs 'lord' (ın bruþ faþs 'bride lord bridegroom' hunda faþs 'lord of a hundred, centurion'), Lith patis, pàts 'husband'

Fem IE potnı 'lady, mistress, wife' Skt patnı, Gk ποτνια, OLith patnı 'mistress, female possessor'

57 IE ō = Skt. ā

IE root do 'give' Skt da-da tı 'gives,' dana 'gift', Gk. δι-δω-μι 'I give,' δω-ρον 'gift', Lat. do-num, Lith duo tı 'to give', OSlav da tı, Russ datj 'to give,' OSlav darъ 'gift,' (antiquated) Russ dar, cf Russ dárom '(as a gift,) for nothing, ın vaın'

Semivowels

58 IE had sıx phonemes called semivowels, each of which could function as a vowel, as a consonant, or as a vowel plus a (homorganic) consonant In these three forms they were

Vocalic form	Consonantal form	Vocalic plus consonantal
ı	y	ıy
u	w	uw
r̥	r	r̥r
l̥	l	l̥l
m̥	m	m̥m
n̥	n	n̥n

59 We call each of these sıx units a *phoneme*, that ıs, a 'mınımum unıt of dıstinctıve sound feature' (L. Bloomfield, *Language* 79) It ıs characteristic of a phoneme that, while ıt may be pronounced dıfferently under dıfferent conditions these dıfferences of pronunciation are automatically regulated by the surrounding features The varıous phonetically dıffering forms of a phoneme are called ıts *positional varıants* or *allophones* Thus ı, y, and ıy are three allophones of a sıngle phoneme It doesn t matter what sign we choose to represent a phoneme but we might use /y/ for thıs one, and /w r l m n/ for the other fıve semivowels of IE Slantıng bars are used to enclose phonemes, ın wrıtıng and prınt.

60 The conditions determınıng each posıtional varıant of a semı

vowel in IE were first fully formulated (as far as they can now be determined) by the writer in *Language* 19 83 ff (1943) 'The Indo European Semivowels' When more than one semivowel came together the results are rather complicated and in part obscure, see my summary p 108 f When one semivowel was preceded and followed by no other semivowel, but only by a vowel and/or a consonant the fairly simple rules are stated pp 84 87 Here is a still briefer summary

I A semivowel was vocalic (i, u, r, l̥, m̥, n̥) between consonants, or in sentence initial or sentence-final position before or after a consonant

II It was consonantal (y, w, r, l, m, n)

(1) Between vowels, or in sentence initial or sentence final position before or after a vowel,

(2) After a vowel and before a consonant,

(3) After a consonant and before a vowel, provided the preceding consonant was itself preceded by a *short* vowel

III It was vocalic plus consonantal (iy, uw, r̥r, l̥l, m̥m, n̥n) after a consonant and before a vowel, if the preceding consonant was *not* preceded by a *short* vowel, that is if it was preceded by another consonant, a *long* vowel or nothing (in sentence initial)

61 Such was the condition of the semivowels in IE It is best preserved in the Rigveda but not perfectly even there In most IE languages we find only remnants or vestiges of it in particular categories of forms In Classical Sanskrit it is still preserved to a large extent, tho much less perfectly than in the Rigveda

62 In Sanskrit then i and y and iy have come to be in part distinct phonemes and so have the descendants of IE u and w and uw, r̥ and r and r̥r etc. that is they are only in part automatic variants of each other under definable conditions.

63 Furthermore historical changes have disguised the forms assumed by some of the positional variants of some of the IE semivowels

64 Accordingly it is necessary, for clarity, to treat these positional variants (at least in part) as separate and independent sounds as to their development in Sanskrit

65 IE ī = Skt ī

IE owī 'sheep' Skt avī Gk ὄ(ϝ)ις Lat ovis, OIr oi Gth awi str 'sheep fold' OE eowe eowu (Eng ewe), Lith avis 'sheep' OSlav ovь-tsa Russ ovtsá 'sheep'

66 IE y = Skt y (except as in II (2) § 60)

IE yugo (m) 'yoke' Skt yuga m Gk ζυγον, Lat jugum Gth juk OE geoc (Eng yoke) Ger Joch OSlav Russ (antiquated) igo (*from yugom > *jьgo > *jьgo by assimilation > igo*) *'yoke'*

67 *But* after a vowel and before a consonant (II (2) § 60) or at the end of an utterance that is when forming what is called a *diphthong* (IE ay ey oy āy ēy ōy) before a consonant or in sentence final y has special treatment in Skt , and it often has in other IE languages The diphthongs containing y (and w) have a tendency all over the IE field to change to monophthongs, that is vowel plus consonantal semivowel y or w (especially when followed by a consonant or final) often becomes some sort of simple vowel

68 In Sanskrit IE ay ey oy are all treated alike (since as we saw IE a e o all become a) and all become a monophthong e when followed by a consonant or at the end of an utterance

This e however is *always long* (Sanskrit has no short e vowel)

69 IE ay = Skt. e

IE aydhos fire burning firewood' Skt. edhas 'firewood', Gk αἰθος (nt) fire'

Also IE aydho same mg Skt edha 'firewood', Gk αἰθος (m), 'fire' cf Lat aedes hearth home', OE ād OHG eit 'funeral pyre'

70 IE ey = Skt. e

IE root deyk point out Skt di-deṣṭi 'points deça '(direction) region Gk. δείκνυμι *I show'* OLat deico Lat dicō *'I say'* (orig show) Gth ga teih-an to indicate' OE tion OHG zihan (Ger zeihen) to accuse (OHG zegōn Ger zeigen from IE deyk §71 with g by Verner's law §12 probably d nominative)

71 IE oy = Skt. e

IE woyda (I have seen) I know' perfect to root weyd see Skt. veda 'I know Gk (ϝ)οἶδα I know (cf ἔιδον I saw)

Gth. wait, Eng. wot, Ger. weiss 'I know'; OPrussian (a Baltic language) waisse 'thou knowest.'

72. The long y diphthongs—combinations of IE ā, ē, ō with y—remain long diphthongs in Skt, they are commonly transcribed āi (or ai).

73. IE āy = Skt. āi

In dat. sg. ending of fem. ā-stems, IE -āy: Skt. -āi (e.g. senāy-āi); Gk. -ᾳ (= -āy; e.g. χώρ-ᾳ); Lat. mēns-ae.

74. IE ēy = Skt. āi

In stem syllable of s-aorist of roots containing y: IE e-lēyk^{w}-sṃ(m) (before vowel -ṃm, before consonant -ṃ) 'I left': Skt. aráikṣam; Gk. ἔλειψα (each generalizing one of the two alternants).

75. IE ōy = Skt. āi

In dat. sg. ending of o-stems, IE -ōy: Skt. (dev-)āy(-a) 'to a god'; Gk. (ἵππ-)ῳ; Praenestine (Italic) (Numasi-)oi (Lat. -ō); Lith. (vil̃k-)ui 'to a wolf.'

76. IE u, w, and uw behave in Skt. quite analogously to IE i, y, iy. Here w appears as a sound transcribed v (actually pronounced in some positions as w), u as u. The diphthongs aw, ew, ow appear as Skt. o (always long! like Skt. e), and āw, ēw, ōw, as (what we write as) āu (or au).

77. IE u = Skt. u

IE yugo- 'yoke,' etc., see § 66

78. IE w = Skt. v

IE woyda 'I know,' etc., see § 71.

79. IE aw = Skt. o

IE root awg- 'increase, strengthen', IE awges, awgos- 'strength': Skt. ojas 'strength'; Lat. augus-tus 'mighty, exalted' Cf. Lat. aug-eō 'I increase', Gth aukan, OE. ēacian 'to increase,' Eng. eke (verb and adverb).

80. IE ew = Skt. o

IE root lewk- and lowk- 'shine.' IE lewk-etay 'shines'; Skt. roc-ate 'shines.' Cf. Gk. λευκός 'shining, white'; Gth. liuhaþ 'light,' OE. lēoht, Eng. light.

81 IE ow = Skt. o

IE lowk, see preceding. Forms from IE ow (rather than ew) are IE (causative) lowkeyeti 'makes to shine' Skt. rocayati same mg, Lat. luceo (originally transitive in OLat 'light (a lamp)' later intrans), IE lowko 'light space' Skt loka 'world', OLat loucom (acc) Lat lucus clearing in a wood grove' cf Lat collucare 'to thin out (a forest) OE lēah (Eng lea), ON lo Dutch lo loo (Water loo) 'meadow' (= clear space)

82 IE aw = Skt au

IE naw, nom naws ship Skt nau (s), Gk ναυς (gen νηος for *ναϝος), Lat nav i s (has become an i stem), OIr náu, ON nōr OE no-wend 'shipmaster sailor'

83 IE ēw = Skt. au

IE dyew (s nom sg) 'sky god of heaven' Skt dyau (s), Gk Ζευς (for older *Ζηϝς) (Lat Ju piter Juppiter from IE dyew, voc used as nom) ON Tyr OE (Tīg) gen Tiwes (Eng Tues day, 'Tīg's day')

84. IE ow = Skt au

IE gʷow (s nom) 'cow ox Skt. gau (s), Gk βους (acc dialectal βων) (Lat bos loan from an Italic dialect, with vowel taken from acc IE gʷom) OE cu Eng cow

85 The vocalic-consonantal forms of the phonemes /y w/, namely iy uw require no special treatment in Sanskrit, they appear as Skt iy uv exactly as if i plus y u plus w

86 Coming to the four other semivowel phonemes IE /r l m n/ their Sanskrit developments are in some ways simpler in others more complicated than IE /y w/ The perfect parallelism between the six IE semivowels has partly broken down in Sanskrit.

87 As to the diphthongal forms which required special treatment for /y w/ no such special treatment is needed for /r l m n/ After any IE vowel (a e o ā ē ō) appearing in Skt. as a or ā IE r l m n are treated as any other r l m n (after a consonant or initially) We don t need therefore to state special rules for IE ar, er or etc in Skt

88 The chief complications concerning /r l m n/ are the following

1 The phonemes /r/ and /l/ in vocalic and consonantal and

vocalic plus consonantal forms, both merged in one phoneme /r/ in prehistoric Indo-Iranian They have that form in Old Iranian (Avestan and Old Persian) In Sanskrit, /l/ was introduced secondarily, for Indo-Iranian /r/ in some occurrences still in prehistoric times But since it always has passed through a stage when there was only /r/, Skt /l/ shows no correlation with IE /l/, it just as often represents IE /r/ And Skt /r/ represents IE /l/ as often as IE /r/

2 The vocalic-consonantal allophones of IE /r l/, namely IE ṛr, ll appear in Sanskrit as ir or ur (or, less commonly, as il, ul, because of the preceding law)

3 The vocalic allophones of /m n/ namely IE m̥, n̥ appear in Skt alike as a And so IE m̥m appears as Skt am IE n̥n as Skt an Greek has the same treatment a for IE m̥ n̥

89 IE r = Skt r

IE ṛḱþo Skt ṛkṣa 'bear' (the animal), etc, see § 36

90 IE l = Skt. r

IE wlkʷo 'wolf' Skt vṛka, Gth wulfs, Eng wolf, Lith vil̃kas, OSlav vlьkъ Russ volk 'wolf' (The f of Germanic must have replaced an older hw, just how or why is disputed)

Note every provable IE l in Skt appears only as r In fact, Skt l is found only in forms of the single root klp 'fashion, form' e g klpta formed' nowhere else The etymology of this root is doubtful some think it related to Lat corpus 'body', if so Skt l would be from IE r in the single root which shows it

91 IE r = Skt. r or l

IE root reudh, roudh, rudh 'red' The other languages than Indo Iranian show only r Gk ἐρευθω 'redden,' ἐρι θρος 'red', Lat. rubidus, ruber, etc, Gth rauþs 'red OE read Eng red, Lith. raudas 'red', OSlav rudъ red' ruda (Russ ruda) 'ore' (originally 'ruddy') But Skt loha reddish' as noun 'copper, metal', lohita and rohita, both 'ruddy, rudhira 'red,' as noun 'blood' etc

92 IE l = Skt r or l

IE root lewk, lowk 'shine', see above §§ 80 81 Note that all IE languages except Indo-Iranian show only l in this root, never r But Skt rocate 'shines' (IE lewketay), roca 'shining' (IE

lewke), rocis 'ray of light,' and many other forms with r On the other hand, Skt loka 'world' (orig 'light space', IE lowko-), lokate and locate 'sees', locana 'illuminating', as noun, 'eye', and many other forms with l

93 These examples are typical, and show clearly that in the same or related words, Skt. l and r both appear for IE r or l

94. In the Rigveda, r is very much commoner, l is quite rare In other words, the Rigveda is still fairly close to Indo Iranian, which had only r for both In later Skt, l increases in frequency, replacing Rigvedic r in some words, but it never becomes as common as r

95 There are however some Middle Indic dialects which have only l, replacing r everywhere

96 No law can be discerned by which Skt chooses between r and l Apparently it was a matter of dialect mixture Some dialects changed Indo-Iranian r to l, either universally (as we just saw), or under conditions unknown to us Sanskrit is a primarily r dialect, which has borrowed from l dialects rather extensively

97. In any case, there is no correlation between either l or r of Skt and either l or r of IE

98 As stated above, IE ṛr and ḷl, the vocalic-consonantal allophones of the phonemes /r l/, appear in Sanskrit as ir or ur (or more rarely as il or ul, by the rule just stated) To put it otherwise, before IE consonantal r, l, IE vocalic ṛ, ḷ became either i or u in Skt No definite principle as to the choice between i and u has been discovered, but u prevails after labial consonants (p, ph, b, bh, m, v), otherwise i is usual

99 The combinations ṛr, ḷl occurred, in IE times, only after a consonant and before a vowel, and only when the preceding consonant was itself preceded by another consonant or a long vowel (i e when the preceding syllable was prosodically long), or when the preceding consonant was initial in a speech utterance (§ 60, III) But in Skt these conditions no longer hold fully, Skt ir, ur (il, ul) from IE ṛr, ḷl, as well as the descendants of the parallel allophones of the other semivowels (IE iy, uw, m̥m, n̥n), sometimes occur when the preceding consonant is preceded by a short vowel, also in absolutely initial position, when there is no preceding consonant, and even before a consonant.

100. IE ṛr = Skt. ir (il), ur (ul)

IE g^{w}ṛreti 'swallows': Skt. girati and gilati 'swallows'; cf. Gk. *βορός* 'gobbling, greedy'; Lat. (carni-)vorus. When a short vowel precedes, IE g^{w}r- replaces g^{w}ṛr-: Skt (Rigveda) (tuvi-)gra- '(mightily) swallowing.'

IE g^{w}ṛretay 'lifts up the voice,' esp. 'praises,' but also 'cries out': Skt. gurate 'greets with joy'; related to Lat. grātus 'welcome, pleasing'; and to Lith. girti 'praise.'

101. IE ḷl = Skt. ir (il), ur (ul)

IE pḷlo-, pḷli- 'stronghold': Skt. pura-, puri- 'stronghold'; Gk. *πόλις* 'city', Lith. pilis 'stronghold, castle.'

IE pḷlu- 'much' (beside plu- after short vowel): Skt. puru- 'much'; Gk. *πολύ(ς)*, Gth. filu (Ger. viel); somehow related to Lat. plūs.

102. IE vocalic ṃ, ṇ both became Skt a. Greek also has *a*. The other IE languages usually replace the vocalic nasal by a consonantal nasal preceded by a vowel, which varies from language to language. Lat. em, en (sometimes im, in), Germanic um, un; Lith. im, in; OSlav. ę (a nasalized *e*), which became Russian ja.

103. IE ṃ = Skt. a

IE ḱṃtom '100' Skt. çatam, Avestan satəm, Gk. (é-)*κατόν*; Lat. centum, OIr. cét, Gth. hund, Lith šimtas, (OSlav. sъto, whence Russ sto, irregular, thought by many to be a borrowed word. Expected would be OSlav. *sęto, Russ. *sjató, some think a form of this is contained in the final member of the Slav. word for '1000,' OSlav tysęšta, Russ týsjacha, orig 'strong hundred').

104. IE ṇ = Skt. a

IE ṇ- 'not,' negative prefix, in composition. Skt. a-(mṛta-, 'immortal'); Gk. *ἀ(-μβροτος*, 'immortal'), OLat. en-, Class Lat. in-, Gth. OE. and general Gmc. un- (Before vowels, Skt. and Gk. an- from IE ṇn-, originally only used after a word ending in a consonant preceded by another consonant or by a long vowel, but generalized by analogy of the numerous forms in a- plus consonant)

105. IE vocalic-consonantal ṃm, ṇn appear, as we should expect, as am, an in Skt and Gk (cf. § 104). Their treatment in the other languages need not be discussed here: in Old Slavic they became ъm, ъn.

106 IE m = Skt m

IE root men (mon) 'think' IE menos 'mind thought' Skt manas , Gk μενος Many related words from the same root showing m n e g Lat memini 'I remember', Gth (preterito-present) man 'I believe' (orig 'have thought'), OE man (same mg)

107 IE n = Skt n

IE root men (mon) 'think,' § 106

Ablaut

108 We have not yet listed all the IE phonemes which, phonetically, functioned as vowels Before naming the rest it is desirable to discuss what is called IE *Ablaut*

109 Ablaut means systematic correspondence between different vowels (or lack of them 'zero vocalism') It is sometimes called in English *vowel gradation* Whenever different vowel phonemes appear in related words we may speak of Ablaut, as in English sing sang, sung, song

110 In Indo-European, we speak of *qualitative* and *quantitative* Ablaut

111 Qualitative Ablaut is variation between vowels of different phonetic quality In IE the varying vowels are usually e and o (also e and o), sometimes, but much more rarely, a and o (also a and o) (But never a and e)

112 Quantitative Ablaut is variation between vowels which differ in quantity In IE we find variation between e and e, between o and o, between a and a and between any of these vowels and zero (total loss of vowel)

113 Often indeed typically IE shows qualitative and quantitative Ablaut combined in one group of related words That is e g , e varies with e and with zero but also with o or ō

114. The typical primary scheme of IE ablaut shows three quantitative and two qualitative grades of vocalism The quantitative are the *lengthened grade* or *Dehnstufe*, *normal* (or *full*, or *strong*) *grade*, and *zero grade* (or *weak grade*) The qualitative are called *e grade* (in a few cases *a grade* instead) and *o grade* Thus, stem ped , pod 'foot'

Lengthened grade	ē	Lat pēs (*pēds)	Doric Gk πώς (*pods)
Normal grade	e	o Lat ped is	Gk ποδος
Zero grade	—	(no vowel) Avestan fra bd a 'forefoot' (bd for pd)	

115 Such variations were, in IE, not random Originally they occurred each in prescribed situations or conditions The normal e grade was originally accented, its reduction to the zero grade accompanied, and was conditioned by, shift of the accent to another syllable Many believe that the lengthened grade resulted from loss of an originally following syllable The conditions of o grade vocalism are much more obscure, and indeed still await any satisfactory explanation But, to a considerable extent, each grade of Ablaut, qualitative as well as quantitative, seems to have occurred in IE in certain specific and typical situations

116 For example, in present forms of what are called 'root class' verbs, the singular active was regularly formed by adding the personal endings to the root in its normal e grade, which was accented IE és ti 'he, she, it is' Skt ásti, Gk ἐστι (with shift of accent), Lat est, OLith esti But the dual and plural were formed by adding the endings to the zero grade of the same root IE s énti (or s-onti) 'they are' Skt s-ánti, Lat sunt

117 Since we have seen that IE a e, o all merged in Skt. a, and IE ā, ē, ō in Skt ā, it is evident that IE *qualitative* Ablaut cannot remain in Skt (At least not directly, in the quality of the vowels We have seen, § 27, that it nevertheless has left an indirect trace, before Skt a, ā from IE e, ē, the IE velars and labiovelars become Skt palatals, just as before IE i, ī, y) There is nothing in the Skt vowels a, ā to show whether a comes from IE a, e, or o, and ā from IE ā, ē, or ō We can therefore largely ignore IE qualitative Ablaut in Sanskrit

118 *Ablaut of roots containing semivowels* Often, in the normal grade, IE had a semivowel after the vowel This semivowel, in this position, had to be consonantal, by the phonemic law determining pronunciation of IE semivowels, § 60, II (1) and (2) Less commonly, IE had a semivowel *before* the vowel, this had to be either consonantal, or vocalic plus consonantal, according to what preceded (§ 60, II (3) and III) In either case, the disappearance of the normal grade vowel compelled the semivowel

(before a consonant or final) to assume vocalic function in the zero grade (§ 60, I) That is, to normal grade *ey oy ay* or *ye yo ya* corresponded zero grade *i* And so zero grade *u* correspon led to normal grade *ew* etc, *we* etc, *r* to *er* etc *re* etc and so on Thus we get schemes of quantitative Ablaut like the following in which the normal grade shows a vowel plus consonantal semivowel (a diphthong), while the zero grade has only a vocalic semivowel (Similar systems existed less often in which e o or a followed the semivowel in the normal grade)—The lengthened grade in most roots was in IE much rarer than the other two Secondary develop ments in Skt made it much commoner there In §§ 121 126 are quoted only a few cases of lengthened grade forms which may with reasonable confidence be assumed to be IE inheritances in many roots these are hard to find

119 Indo European

Lengthened grade	ey(oy)	ew(ow)	er(or)	el(ol)	em(om)	en(on)
Normal grade	ey(oy)	ew(ow)	er(or)	el(ol)	em(om)	en(on)
Zero grade	i	u	ṛ	ḷ	ṃ	n

which in Sanskrit appear as

Lengthened grade	ai	au	ar(al)	ar(al)	am	an
Normal grade	e	o	ar(al)	ar(al)	am	an
Zero grade	i	u	r	r	a	a

120 In a complete statement it would have to be added that before a following vowel (of a suffix or of another word) the zero grade as stated above would be replaced by the consonantal or (according to what precedes § 60 III) the vocalic plus consonantal form of the semivowel that is by

Indo European	y(iy)	w(uw)	r(ṛr)	l(ll)	m(mm)	n(nn)
= Sanskrit	y(iy)	v(uv)	r or l (ir ur il ul)		m(am)	n(an)

120a The Hindu grammarians treated these same phenomena in their own fashion as the guna vrddhi system tabulated in Whit ney 236 They regarded our zero grade as basic and gave it no name From it they derived the guna (our normal) grade by prefixing (Skt) a (IE e o a) whereas we reverse this theory by starting with the normal or guna grade and assuming loss of the vowel in the zero grade Our lengthened grade is the Hindu

vṛddhi: they regarded it as formed by prefixing (Skt.) a to the normal grade (guṇa).

120b. The Skt. a-vowels do not really fit into the pattern set up by the Hindus. This is illustrated by the fact that they put a (and even ā) into both the guna and the (by them unnamed) zero grade. Actually, in original IE, the vowels a, e, o (= Skt. a) occurred only in the normal grade (Hindu guna), and ā, ē, ō (= Skt. ā) only in the lengthened grade (Hindu vṛddhi), except in 'heavy bases' (see § 127) where IE ā, ē, ō (Skt. ā) occurred in the normal grade. In the zero grade there was originally no vowel at all. Forms which show Skt. a in positions requiring zero grade vocalism are analogical, although some such analogical forms may have been created, secondarily, in late forms of IE itself.

Examples of Ablaut systems in roots containing semivowels

121. *Roots containing y*: IE ey (oy), i, 'go.'

Normal grade: IE ey-mi 'I go': Skt. é-mi; Gk. εἶ-μι; Lith. ei-mì 'I go.' Same grade in Slavic i-ti 'to go.'

Zero grade: IE i-te (or i-the) 'ye go': Skt. i-thá; Gk. ἴ-τε 'ye go.' Same grade in Lat. i-tiō 'going, motion.'

122. *Roots containing w*: IE klew (klow), klu, 'hear.'

Lengthened grade: IE klēw-: Skt. aorist a-çrāu-ṣīt 'he heard.'

Normal grade: IE klew-ter- 'one who hears': Skt. çro-tar-. IE klew-os- 'fame': Skt. çravas-; Gk. κλέ(ϝ)ος. Same grade in OHG. hliu-(munt), Ger. Leumund 'reputation, report.'

Zero grade: IE klu-to- 'heard': Skt. çru-ta- 'heard'; Gk. κλυτός 'famous'; Lat. in-clutus 'famous'; prior element in Germanic proper names like OHG. Hlud-(erīch), OE. Hloþ-(wīg) (Ger. Ludwig).

123. *Roots containing r*: IE bher (bhor), bhṛ 'bear, carry.'

Lengthened grade: (o-grade) IE bhōr-: in Skt. bhāra- 'burden'; and in Gk. φώρ, φωρός 'thief'; φωριαμός 'chest for packing clothes.'

Normal grade: IE bher-ō 'I bear': Skt. bharā(mi); Gk. φέρω; Lat. ferō; Gth. baira, Eng. bear; OSlav. berą, Russ. bjerú 'I take.'

Zero grade: IE bhṛ-ti- 'carrying': Skt. bhṛti- 'carrying; maintenance, salary'; Lat. fors, abl. forte 'chance' (a 'bringing'

of fate), fortuna, Gth ga baurþs 'birth,' Eng birth, burden (older burthen)

124. *Roots containing l* IE wel (wol), wl̥ 'will, wish, choose'

Normal grade IE welo- (wolo-) Skt vara (probably IE welo-) 'choice, wish, (adj) choice, excellent' Same grade in Lat. volo (older velo) Gth wiljan 'will' and (o grade) waljan 'choose' (Ger wahlen), Lith pa vel mi 'I will', OSlav vel jǫ, Russ vjeljú 'I command,' and (o grade) OSlav Russ vólja ' (free)will'

Zero grade IE wl̥to 'chosen, wished' Skt vrta Same grade in Lith viltis 'hope' ('wish', IE wl̥tí)

125 *Roots containing m* IE g^{w}em (g^{w}om), g^{w}m̥, 'go, come'

Normal grade (o-grade) IE g^{w}e-g^{w}om a 'I went' Skt jagama 'I went', Gth qam 'I came' (to infin qiman 'to come' from IE g^{w}em) (Eng come and Ger kommen are from zero-grade forms)

Zero grade IE g^{w}m̥ti 'going coming' (noun) Skt gati 'going, gait, course', Gk *βασις* 'step tread, basis', Lat in venti-o 'coming at, invention', Gth ga-qumþs 'meeting' From the same grade Gk. *βαινω* 'go' and Lat venio 'come,' but there are difficulties and obscurities about both

126 *Roots containing n* IE men (mon), mn 'think'

Lengthened grade IE men Vedic aorist (a)man sta 'he thought'

Normal grade IE menos 'thought' Skt manas, Gk *μενος* From IE o grade Gk *με μον-α*, perfect, 'I think on', cf Lat. memini 'I remember'

Zero grade IE mn̥ ti 'act of thinking' Skt mati , Lat mens, Gth ga munds 'recollection' OE ge mynd, Eng mind, Lith at mintis 'recollection', OSlav pa mętь, Russ pámjatj 'recollection, memory'

127 *Ablaut of Heavy Bases* In some IE roots, a long vowel (a, e, or ō) appears in positions which belong typically to the normal grade, not the lengthened grade, that is, in which most roots show short a, e, or o Particularly striking are cases in which this long vowel is final in the root. For these are discordant with the phonetic pattern of IE in general There is no IE root ending in short a e, o, roots containing these vowels always end in a

consonant (or semivowel, which in the normal grade must always be consonantal in function § 60 above) But, in certain roots, IE long e o, a may end a root Such roots are called *heavy bases*, the others, of the type we have previously talked about, are *light bases* (Some heavy bases however, show consonants after the long vowel of the normal grade, like light bases)

128 The clearest evidence for a heavy base is occurrence of an IE long vowel in normal grade situations, that is, where light bases show an IE short vowel (plus consonant or consonantal semivowel) Such a situation for example, is that form of a root which precedes the IE noun-of agent suffix ter (tor) Here the root shows normal grade So Skt bhar tar (IE bher ter , or -tor) 'one who bears', çro tar (IE klew ter) 'one who hears,' etc But Skt dha tar 'one who sets, establishes', stha tar 'one who stands', da tar 'one who gives' which point to IE dhe ter or tor , stha tor (Lat stator), do tor (Gk δωτωρ) These long vowels are not to be taken as lengthened grade forms, that grade does not appear before this suffix The fact that these long vowels may be final in their roots, as in the examples cited confirms our view that they are structurally something different from the IE a, e, ō which function as lengthened grades to IE a, e, o

129 *Zero grade of heavy bases IE ə 'shua'* What happens in the zero grade of these heavy bases? Is even a *long* IE normal grade vowel lost in them?

130 There are a few forms which seem to look in that direction But they are problematic and probably to be explained otherwise

131 The question should be answered by looking at forms which regularly show zero grade in light bases Such a form is the past passive participle in IE to- (or no-) Skt ta (na) Thus, from three light bases cited above IE roots ey 'go,' klew 'hear,' bher 'bear we have participles Skt i ta , çru ta , bhr ta (IE i to , klu to , bhr to), 'gone heard, borne'

132 The participles of the three heavy bases cited above are Skt. dhi ta (hi ta) sthi ta , and (in some compounds) -di ta (the usual datta is secondary but easily explained)

133 Evidently Skt i corresponds as zero grade to *normal grade* Skt ā whether this be derived from IE ā, e, or o

134 This Skt ɪ cannot be derived from IE ɪ, for two reasons (1) No semivowel (y) appears in the normal grade forms of these roots (2) In the IE languages outside of Indo Iranian, even the zero grade contains no ɪ but rather (usually) the same vowel which otherwise represents IE a

135 We must therefore posit a special IE zero grade vowel, which it is customary to call *shwa* (a Hebrew term) and to write ə, as the IE zero grade correspondent to normal grade a e, ō in heavy bases

136 We then set up the phonetic law IE ə becomes Skt (and Iranian) ɪ, but in other IE languages is treated like IE a

This is confirmed by at least one word for which no normal grade forms are known, but where the treatment is the same

IE ə = Skt ɪ (Gk, Lat, Germ a)

IE pətər 'father' Skt pitar Gk πατηρ Lat pater, Gth fadar, Eng father

137 IE ə was maintained, even in IE itself only before consonants (including consonantal semivowels) It was always lost before vowels

138 *Pre Indo European note* According to many scholars of recent times, 'Indo Hittite'—a common fore runner of Indo-European and Hittite—contained four consonants called *laryngeals* These most of them believe were lost in Indo European, leaving lengthening of a preceding vowel when a consonant followed Thus this school accounts for the normal grade long vowels of IE heavy bases IE a e o in these heavy bases are derived from Indo Hittite short vowels plus laryngeal consonants Thus the heavy bases did not originally end in root final vowels, but in laryngeal consonants, they fit better into the general IE pattern See Sturtevant's *Indo Hittite Laryngeals* (1942) 66 ff

139 It has been suggested that IE ə may have been a correspondent of a laryngeal consonant which assumed vocalic function when in the zero grade the normal grade vowel disappeared somewhat as the IE semivowels did in the same circumstances Sturtevant's view however is different

140 *Dissyllabic bases* Not a few IF roots containing semivowels show, in their normal grade (before a consonant), dissyllabic

forms, where the roots so far considered (both light and heavy) have monosyllabic forms

141 The simplest and, for our purposes, most interesting of these dissyllabic forms are a group typefied by IE bhewə, Skt bhavi 'become, come to be' Here the first syllable has a normal e grade vowel, a semivowel follows, and the second syllable contains IE ə, Skt. i This and similar forms occur in situations where other roots have monosyllabic elements. So before the agent suffix IE ter, tor, Skt bhavi tar 'one who becomes' contrasts with çro tar 'one who hears' (IE bhewə-tor, klew tor)

142 In the zero grade of such roots, for example in the past passive participle, we should theoretically expect (e g) an IE *bhwə to Perhaps something like that may once have existed Or, instead of *wə, perhaps it was once u plus a laryngeal consonant (see §§ 138 9) (We must in theory assume that ə is always a zero grade to a heavy base normal grade ā, e, or ō)

143 But throughout the whole IE territory we find, instead of any such thing, either a long ū, or something which seems clearly to go back to an IE u The participle of the root IE bhewə was IE bhū to, Skt. bhu ta, 'become' Similarly from a root IE neyə 'lead' we get a pple IE nī to, Skt ni ta 'led' And while no r̥̄, l̥̄, m̥̄, n̥̄ is actually preserved as such in historic IE speech, there is good reason to believe that they existed in IE in cases analogous to such ī and u This assumption is based not only on the general parallelism between the six semivowels It seems confirmed by some of the historic forms found in the zero grade of dissyllabic bases containing r, l, m, n, they seem in various ways to recommend the assumption of long vocalic semivowels

144 A set of parallel forms will help to make clear these conditions In each pair of roots, the first is monosyllabic, the second dissyllabic For each root we cite the reconstructed IE, and the actual Sanskrit, noun of agent in IE ter or tor (Skt. tar), with normal grade of root, and the past passive participle in IE to or no- (Skt. ta or na), with zero grade (Page 29)

145 We therefore set up six long vowels peculiar to the zero-grade of dissyllabic bases containing semivowels, which phonetically seem to have been lengthenings of the six vocalic forms of the semivowels i, u, r̥, l̥ m̥, n̥ These were not, in IE, members of

IE root	*Normal grade*		*Zero grade*	
	IE	Skt	IE	Skt
ey (oy) ı 'go'	*ey tor-*	e tar- 'one who goes'	ı to-	ı ta- 'gone'
neyə (noyə) nī 'lead'	neyə tor-	nayı tar-	nī to-	nī ta-
klew (klow) klu 'hear'	klew tor-	çro tar-	klu to-	çru ta-
bhewə (bhowə) bhū 'become'	bhewə tor-	bhavı tar	bhu to-	bhū ta-
bher (bhor) bhṛ 'bear'	bher tor	bhar tar-	bhṛ to-	bhr ta-
terə (torə) tr̄ 'traverse'	terə tor-	tarı tar-	tr̄ no-	tīr na-
ghwel (ghwol) ghwḷ 'be crooked'	ghwel tor	hvar tar- [a]	ghwḷ to-	hvṛ ta-
pelə (polə) pḷ 'fill'	pelə tor	parı tar- [a]	pḷ no-	pūr na-
men (mon) mn̥ 'think'	men tor- [b]	man tar-	mn̥ to-	ma ta-
genə (gonə) gn̥ 'beget'	*genə-tor* [b]	janı tar-	gn̥ to	ja ta-

[a] These forms are cited from Hindu grammarians, other normal grade forms from the same roots confirm them
[b] Cf Latin mentor, genitor

the semivowel phonemes, altho they were derived historically from combinations of the semivowels with some other sounds (either IE ə or its ancestor, or a laryngeal consonant).

146. In some cases, such as IE mūs 'mouse' (below), we find such vowels in isolated words, showing no clear relations with other words. These are presumed to be remnants of otherwise lost Ablaut systems.

The Sanskrit resultants of these sounds were as follows:

147. IE ī = Skt. ī

IE g^{w}īwo- 'living, alive, lively': Skt. jīva- 'alive'; Lat. vīvus; Lith. gývas; OSlav. zhivъ, Russ. zhiv. Related, but seemingly derived from a form with short i: Gk. *βίος* 'life'; Gth. qius 'living'; with a suffix derived from IE -g-, OE. cwicu, Eng. quick.

148. IE ū = Skt. ū

IE mūs- 'mouse': Skt. mūs-; Gk. *μῦς*; Lat. mūs; OE. OHG. (etc.) mūs; OSlav. myšь, Russ. mysh.

149. IE $\bar{\underset{\cdot}{\text{r}}}$ = Skt. īr, ūr

Cf. Skt. ir, ur, from IE ṛr and ḷl. Instead of īr, ūr, we might expect to find sometimes īl, ūl, but no such case has been noted for either IE $\bar{\underset{\cdot}{\text{r}}}$ or $\bar{\underset{\cdot}{\text{l}}}$. After labial consonants, ūr is usual, otherwise īr; but there are exceptions.

IE $\bar{\underset{\cdot}{\text{r}}}$mo- 'arm': Skt. īrma- 'arm, fore-leg of an animal'; Lat. armus; Gth. arms, Eng. arm; OSlav. ramo 'shoulder' (Russ. antiquated and literary, plural only, ramjená 'shoulders').

150. IE $\bar{\underset{\cdot}{\text{l}}}$ = Skt. īr, ūr

See note under IE $\bar{\underset{\cdot}{\text{r}}}$, which applies here also.

IE root (zero grade) m̥dh- 'top' or the like: Skt. mūrdh-an- 'head, top'; Gk. *βλωθ-ρός*, 'tall,' for **μ(β)λ-*, cf. *ā-μ(β)ροτος* 'immortal'; OE. molda 'top of the head.'

151. IE $\bar{\underset{\cdot}{\text{m}}}$ = Skt. ā

IE ĝ$\bar{\underset{\cdot}{\text{m}}$-ro-: Skt. jā-ra-, 'suitor, lover'; related to Gk. *γαμβρός* 'son-in-law' and to the root of Gk. *γαμέω* 'marry.' (A related form in lengthened grade: Skt. jām-ātar- 'son-in-law.') Probably from IE ĝ$\bar{\underset{\cdot}{\text{m}}$- with a different suffix: OSlav. zętь, Russ. zjatj 'son-in-law.'

Note: the Skt. participles of dissyllabic roots containing m are all formed like IE dema-, Skt. damı-(tar-) 'subdue,' past pple. Skt.

danta 'subdued' This is best regarded as for original *dă ta (IE dm̥ to-) with nasal (originally m, assimilated to n before t) analogically inserted under the influence of normal and lengthened grade forms

152 IE n̄ = Skt. a

IE ĝn̄ to- 'born' (pple to ĝenə) Skt jata 'born', Lat (g)nātus (cf co gnatus), Gth (himina)kunds 'heaven born,' OE (heofon)cund

Note an intrusive nasal is very much rarer in the participles of *dissyllabic roots containing n than in those with m, but it occurs in* Skt pple dhvanta 'sounded' (normal grade dhvani 'sound')

153 *Table of Sanskrit Vowels with their possible IE originals*

Skt a from	IE a, e o, m, n̥
a	a, e, o, m̄ n̄
i	i ə (*and Skt* ir, il *from* r̥r, l̥l)
ī	i (and Skt ir from r̥̄, l̥̄)
u	u (*and Skt* ur, ul *from* r̥r, l̥l)
ū	u (and Skt ur from r̥̄, l̥̄)
r	r̥, l̥
l	(only Skt root klp perhaps IE r̥)
r̄	See *
(l̄ does not occur)	
e	ay, ey, oy
ai	ay, ey, oy
o	aw ew, ow
au	aw, ew ow

* Skt r̥ occurs only in the acc pl and gen pl and nom acc pl neuter endings of noun stems in r e g dātr̥n dātr̥ṇām It has no prehistory *since these endings* are late analogical creations in imitation of the corresponding cases of i and u stem nouns The analogical proportion would be

agni bhis agnin agnīnām =
çatru bhis çatrūn çatrūṇām =
dātr̥ bhis dātr̥n dātr̥ṇām